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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,158	05/09/2001	Toshiyuki Shigaraki	862.C2224	2511

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EXAMINER

KIELIN, ERIK J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 09/02/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,158

Applicant(s)

SHIGARAKI, TOSHIYUKI

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-16 and 19-35 is/are pending in the application.
- 4a) Of the above claim(s) 4-15 and 19-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,16,34 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 July 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 16, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-186077 A (**Nakamura**; assigned to the same assignee as the instant application) in view of Semiconductor Equipment and Materials International (SEMI) publications **S2-0200** entitled, "Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment."

Regarding claims 1 and 16, **Nakamura** discloses a semiconductor manufacturing apparatus and method of using

a chamber **101** enclosing a main body of a semiconductor exposure apparatus (Figs. 1, 2, 6) --as further limited by instant claim 34 -- having a predetermined area inside the semiconductor exposure apparatus --as further limited by instant claim 35--

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a purging means **2, 3** and purging step for purging inert gas in a predetermined area inside said chamber (paragraph [0017]);

setting means and setting step for setting a maintenance mode (paragraph [0035]);

a panel for maintenance **5C, 5D** provided in the outer wall of said chamber 101;

a sensor **4A, 4B** for detecting an opening of said panel provided in an outer wall of the chamber; and

a sensor **14** for determining if the level of inert gas is at a safe level for an operator to perform maintenance (Abstract; paragraphs [0023], [0027], [0034] through [0037], and [0044]).

It would appear to be inherent that there exists a supplying means and supplying step for providing air based upon the output of the sensor indicating that the inert gas is at an unsafe level since, in the absence of such supply, the sensor could never indicate that the inert level was safe for the operator to perform maintenance. This would be contrary to the teaching in Nakamura.

However, in the event that it is thought that Nakamura does not teach a supplying means and supplying step for supplying clean, dry air based upon an output of a sensor that detects an opening in a maintenance panel, when the maintenance mode has been set, then this may be a difference.

S2-0200 states on p. 6,

“6.1 A primary objective of the [semiconductor manufacturing] industry is to eliminate or control hazards during the equipment’s life cycle (i.e., the installation, operation, **maintenance, service**, and disposal of equipment).” Note that “equipment” is defined therein as “a specific piece of machinery, apparatus, process module, or device used to execute an operation.” (See p. 3, section 5.2.11. Emphasis added.)

S2-0200 further states on p. 7,

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"6.9.2 Incorporate Safety Devices -- If identified hazards cannot be eliminated or their associated risk adequately controlled through design selection, then the risk should be reduced through fixed, automatic, or other protective safety design features or devices." (Section 6.9.2; emphasis in original.)

"6.9.3 Provide Warning Devices -- If design or safety devices cannot effectively eliminate identified hazards or adequately reduce associated risk, a means should be used to detect the hazardous condition and to produce a warning signal to alert personnel of the hazard." (Section 6.9.3; emphasis in original.)

In section 22 entitled **"22 Exhaust Ventilation"** (emphasis in original), pp. 24 and 25,

S2-0302 states,

"22.1.2 As supplemental control when intermittent activities (e.g. chamber cleaning, implant housing cleaning) present potentially hazardous chemical exposures to employees which cannot reasonably be controlled by other means[, s]upplemental exhaust hood or enclosures may be integrated into equipment design, or supplied completely by the equipment user."

"22.1.2.1 When a procedure (e.g., cleaning) specified by the supplier requires exhaust ventilation, the supplier should include minimum criteria for exhaust during the procedure."

"22.2 Equipment exhaust ventilation should be designed and a ventilation assessment conducted ...to control, efficiently and safely, for potential worst-case, realistic employee exposures to chemicals during normal operation, maintenance, or failure of other equipment components (hardware or software)."

"22.4.1 When the exhaust falls below the prescribed set point, an alarm should be provided within audible or visible range of the operator, and the process equipment should be placed in a safe stand-by mode... The system should be capable of interfacing with the facility alarm system."

- (1) Because 6.1 states that hazards during maintenance and service should be prevented,
- (2) because 22.2 indicates that sufficient exhaust ventilation must be provided during maintenance, and (3) because 22.1.2 and 22.1.2.1 indicate that the absence of oxygen or the presence of hazardous gases in the maintenance areas of a semiconductor apparatus are to be prevented (i.e. are life threatening) by using adequate exhaust ventilation, it would have been

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obvious for one of ordinary skill in the art at the time of the invention, to provide a gas containing oxygen during maintenance in **Nakamura**, because oxygen is required for human life and because flowing gas containing oxygen can flush away or dilute toxic gases to safer levels, as suggested by the sections indicated in **S2-0200** should be provided during maintenance, and because **Nakamura** indicates that the inert gas should be decreased to a safe level.

Although the air provided by the exhaust ventilation in **S2-0200** is not indicated to be clean and dry, it would have been obvious for one of ordinary skill in the art, at the time of the invention, to provide clean, dry air in **Nakamura**, as opposed to contaminated, wet air, in order to ensure the safety of the employees and to prevent contamination to the semiconductor apparatus, which is absolutely essential in the semiconductor fabrication art to prevent damage to the apparatus and to the semiconductor device to be manufactured therein.

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,295,121 B1 (**Nakamura et al.**, assigned to the same assignee as the instant application) is the US patent having priority established upon the Nakamura reference applied above.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
Primary Examiner
August 27, 2003